REMARKS

Applicants hereby offer preliminary amendments to the present application to place the application in better form for allowance.

Applicants have canceled Claims 1-12 in favor of replacement Claims 13-28 to correct certain informalities (including avoidance of multiple dependencies, avoidance of use claims, and removal of preferences or addition of new claims directed to such preferences) and to clarify the intended meaning of the claims. Applicants respectfully submit that the claims are fully supported in the specification.

Applicants have amended the specification to change the title to correspond to the English version of the title appearing on the International Application and to capitalize all letters in the title. Applicants submit that these amendments serve only to clarify their application and do not alter the scope of their disclosure.

Applicants have added an Abstract that summarizes the subject matter of their invention. A copy of the new Abstract is separately attached.

In view of the preceding amendments and remarks, allowance of the claims is respectfully requested.

Respectfully submitted,

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ANNOTATED VERSION OF AMENDMENTS

IN THE SPECIFICATION:

The title at page 1, line 1, has been changed from "**Process for the dihydroxylation of olefins by means of transition metal catalysts**" to

--METHOD FOR THE DIHYDROXYLATION OF OLEFINS USING TRANSITION METAL CATALYSTS --

IN THE CLAIMS:

The heading for the claims at page 18, line 1, has been changed from "**Claims**" to --WHAT IS CLAIMED IS:--.

Claims 1-12 have been canceled in favor of replacement Claims 13-28.

--13. A process for the dihydroxylation of olefins using transition metal catalysts to obtain monofunctional, bifunctional, and/or polyfunctional 1,2-diols of the formula (I)

$R^1R^2C(OH)-C(OH)R^3R^4$ (I)

where

R^1 to R^4 are each, independently of one another, hydrogen, alkyl, CN, COOH, COO-alkyl, COO-aryl, CO-alkyl, CO-aryl, O-alkyl, O-aryl, O-CO-aryl, O-CO-alkyl, OCOO-alkyl, N-alkyl$_2$, NH-alkyl, N-aryl$_2$, NH-aryl, NO, NO_2, NOH, aryl, fluorine, chlorine, bromine, iodine, Si-alkyl$_3$, CHO, SO_3H, SO_3-alkyl, SO_2-alkyl, SO-alkyl, CF_3, NHCO-alkyl, $CONH_2$, CONH-alkyl, NHCOH, NHCOO-alkyl, $CHCHCO_2$-alkyl, $CHCHCO_2H$, PO-(aryl)$_2$, PO(alkyl)$_2$, PO_3H_2, or PO(O-alkyl)$_2$, where alkyl is a linear, branched, and/or cyclic aliphatic organic group having from 1 to 18 carbon atoms and aryl is a 5-, 6-, or 7-membered aromatic ring containing from 4 to 14 carbon atoms and from 0 to 3 heteroatoms and is optionally fused, and where the alkyl and/or the aryl group optionally bears up to six substituents selected independently from the group consisting of hydrogen, alkyl, O-alkyl, OCO-alkyl, O-aryl, aryl, fluorine, chlorine, bromine, iodine, OH, NO_2, NO, Si-alkyl$_3$, CN, COOH, CHO, SO_3H,

NH_2, NH-alkyl, N-$alkyl_2$, PO-$alkyl_2$, SO_2-alkyl, SO-alkyl, CF_3, NHCO-alkyl, COO-alkyl, $CONH_2$, CO-alkyl, NHCOH, NHCOO-alkyl, CO-aryl, COO-aryl, PO-$aryl_2$, PO_3H_2, PO(O-$alkyl)_2$, and SO_3-alkyl, where alkyl and aryl are as defined above,

comprising reacting an olefin of the formula (II)

$R^1R^2C=CR^3R^4$ (II)

where R^1 to R^4 are defined as for formula (I),

with molecular oxygen in the presence of an osmium, ruthenium, or manganese compound or a mixture thereof in water or a water-containing solvent mixture at a pH of from 7.5 to 13.

14. The process according to Claim 13 for preparing compounds of the formula (I) wherein for olefins of the formula (II) the substituents R^1 to R^4 are each, independently of one another, hydrogen, alkyl, CN, COOH, COO-alkyl, COO-aryl, CO-alkyl, CO-aryl, O-alkyl, O-aryl, N-$alkyl_2$, aryl, fluorine, chlorine, bromine, iodine, CHO, CF_3, NHCO-alkyl, $CONH_2$, CONH-alkyl, or NHCOO-alkyl.

15. The process according to Claim 13 wherein diols of the formula (I) in which R^1 to R^4 are each, independently of one another, hydrogen, alkyl, CN, COOH, COO-alkyl, CO-alkyl, CO-aryl, O-alkyl, O-aryl, aryl, fluorine, chlorine, bromine, CHO, or NHCO-alkyl are prepared.

16. The process according to Claim 13 wherein the oxidant is oxygen or a gas mixture comprising at least 15% by volume of oxygen.

17. The process according to Claim 13 wherein the catalyst is an osmium, ruthenium, or manganese compound.

18. The process according to Claim 13 wherein the reaction proceeds at a temperature of from 20 to 200°C and a pressure of up to 200 bar.

19. The process according to Claim 13 wherein an amine is added to improve selectivity.

20. A process according to Claim 19 wherein the amine is a tertiary amine.

21. A process according to Claim 19 wherein the amine is a bicyclic amine of the quinuclidine type.

22. The process according to Claim 13 wherein a sulfonamide is added as a cocatalyst.

23. The process according to Claim 22 wherein the sulfonamide cocatalyst is a methylsulfonamide and/or a carboxamide.

24. The process according to Claim 13 wherein the osmium compounds OsO_4, $K_2Os_2(OH)_4$, $Na_2Os_2(OH)_4$, $Os_3(CO)_{12}$, $OsCl_3$, H_2OsCl_6, $[CF_3SO_3Os(NH_3)_5](O_3SCF_3)_2$, OsO_4 on vinylpyridine, or Bu^tNOsO_3 are used as catalysts and/or catalyst precursors.

25. The process according to Claim 13 wherein the manganese compounds MnO_2, $KMnO_4$, $Ca(MnO_4)_2$, $MnCl_3$, or $Mn(OAc)_3$ are used as catalysts and/or catalyst precursors.

26. The process according to Claim 13 wherein the ruthenium compounds $RuCl_3$, RuO_4, or RuO_2 are used as catalysts and/or catalyst precursors.

27. The process according to Claim 13 wherein the catalyst is used in amounts of from 0.2 to 0.00001 equivalents, based on the olefin.

28. The process according to Claim 13 wherein the ratio of amine to metal is from 0.01:1 to 1 000:1.--

IN THE ABSTRACT:

An Abstract has been added as new page 21 as follows:

--METHOD FOR THE DIHYDROXYLATION OF OLEFINS USING TRANSITION METAL CATALYSTS

ABSTRACT OF THE DISCLOSURE

This invention relates to process for dihydroxylation of olefins using transition metal catalysts to obtain monofunctional, bifunctional, and/or polyfunctional 1,2-diols of the formula (I)

$R^1R^2C(OH)\text{-}C(OH)R^3R^4$ (I)

where R^1 to R^4 are defined herein, by reacting an olefin of the formula (II)

$R^1R^2C{=}CR^3R^4$ (II)

where R^1 to R^4 are defined as for formula (I),

with molecular oxygen in the presence of an osmium, ruthenium, or manganese compound in water or a water-containing solvent mixture at a pH of from 7.5 to 13.--